

Hobbies

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How you can easily construct AN EPISCOPE

THIS instrument has achieved considerable popularity in later years for projecting views and objects on to a screen. It has two advantages over the lantern or dioscope, as it is termed, firstly being able to project larger size pictures than the $3\frac{1}{2}$ in. square slides, and secondly its ability to project solid objects. The construction is simpler, too, but there is little to choose as regards expense, if a good lens is to be provided.

The lens is important, if a flat picture, one free from spherical aberration is desired. Such a lens is not a cheap affair, but if the cost is too much for a reader's pocket, it would be a good idea to try for a secondhand camera lens, of the whole plate size—this might serve. Addresses of possible sources of supply are obtainable on request to the Editor.

The Case

The case is made of wood. The sides are shown at Fig. 1 and can be cut from $\frac{1}{4}$ in. plywood or fretwood. At the bottom, a strip $\frac{3}{8}$ in. wide is sawn out, as at (A) for the carrier to enter. At about the spots shown at (B) small screw holes are bored to fix the mounts on which the two lamps will be fitted. An

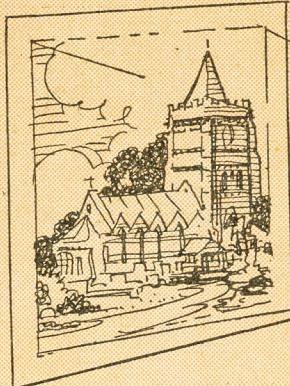
end view of the case is shown at Fig. 2. Cut these ends from $\frac{3}{8}$ in. wood, and near top and bottom, bore a row of ventilation holes, $\frac{1}{8}$ in. diameter. Now glue and nail the sides to the ends.

Across the open bottom of the case, nail $\frac{1}{8}$ in. by $2\frac{1}{2}$ in. strips of wood, one each side of the carrier opening, shown by shaded lines in Fig. 1. The ventilation holes are shielded with bent strips of tin, as at (C) nailed over. These trap the light from escaping and at the same

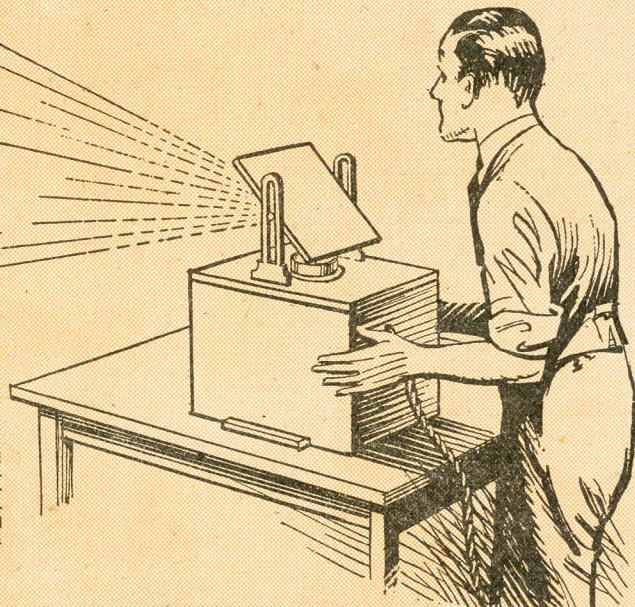
time allow free passage of the heated air and entry of cool fresh air in its place. Some warmth is generated inside the case, and must be allowed to escape.

Lamp Mounting

The lighting arrangement suggested is a pair of 60 watt projection lamps. These should provide sufficient illumination for a well lighted picture. For the lamps, purchase a pair of batten-type holders. Cut a disc of fretwood the same



A popular and simple instrument for showing enlarged pictures on a wall screen



diameter as the holders, one for each, and screw the holders to them.

These should be mounted on a block of wood, thick enough to bring the filament of the lamps approximately in the centre of the case, as shown by the dotted outline in Fig. 2. Then the blocks are screwed to the sides of the case at about the position shown.

For reflectors, tinplate is suggested. Of course, copper or brass, silver or chromium plated, would be better, but if not feasible the tinplate, especially if rubbed up with metal polish, is quite a good substitute. Get a sheet of stout plate, and from it cut two pieces to size given in Fig. 3.

Two tabs are allowed for, one each side, for fixing the reflectors inside the case. Bend the tinplate to about the curve shown in inset, then bend the tabs or part of them, to right angles, and screw the reflectors over the lamps at the position shown in Fig. 1. In this diagram only one reflector is shown, the second one is opposite, of course.

Lens and Lid

The lid of the case, which carries the lens, is shown at Fig. 4. Cut it from $\frac{3}{8}$ in. wood to the outside dimensions of the case, and at the right spot, each end, glue inside a strip of thin wood to keep the lid in its correct position. In the centre of the lid bore a hole of a suitable size for the lens.

This lens, by the way, should be not less than 7 in. focus, and be of the focussing kind. If the lens is longer, that is, focally, the height of the case, given in the drawing as 7 in., should be increased proportionately.

It will be seen from the finished view, that the lens is placed on top of the case, and not, as is more usual, at one side.

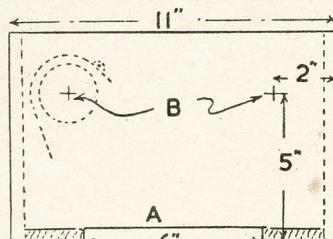
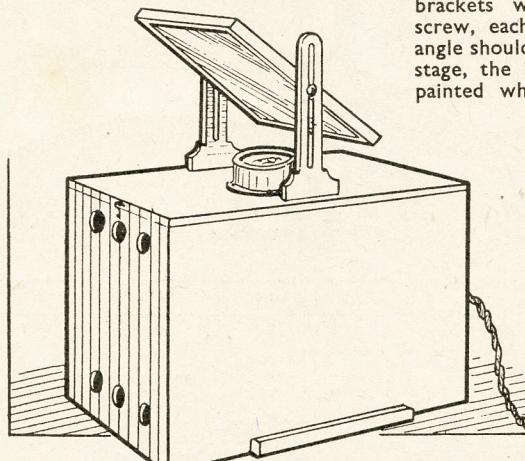


Fig. 1—Detail of box sides

screen, and therefore right way round, or by projecting the view via a mirror, and obtaining a second reversal by that means. The latter idea is the one proposed in the episcope herewith.

To support the mirror a pair of brackets are to be cut, to shape and size



given at (D) in Fig. 4. These can be cut from $\frac{1}{4}$ in. fretwood. The mortise slots for their reception, to be cut in the lid, are marked off on one side of a line cutting across the middle of the lid, as will be seen.

In the position shown the mirror will face one end of the case, which will suit nicely if the lens is of the type provided with a mount to be screwed over the hole. If, however, the mount is not projected above, or is, perhaps, only $\frac{1}{4}$ in. or $\frac{3}{8}$ in. high, it will be better, perhaps, to fit the brackets for the mirror to face side-, not end-ways, to

A piece of mirror glass is cut to fit the frame, and a piece of wood to fit also, and go behind the frame to fill up the space. Nail the latter in place, lay the mirror over, and keep it in position with metal clips at top and bottom.

The mirror is mounted between the brackets with a round-headed brass screw, each side, for adjustment. Its angle should be just 45 degrees. At this stage, the interior of the case can be painted white, and the outside black enamelled.

The lamps are connected in parallel, and fitted with a switch, and plug, the latter on a flex connection. Unless the reader knows enough of electrical matters to do this job satisfactorily, he would be well advised to get it done at the shop where he purchases his mounts and lamps. Nothing like being on the safe side where the house current is concerned. A hole in a suitable position on the case should be bored to

lead the flex out, perhaps at one end would be as convenient a spot as any.

Solid objects, too thick to slide under the case for projection, can be laid on a piece of white paper and the episcope stood over them. For flat objects, and picture postcards or photos, a tray should be made, which can slide beneath the instrument.

The idea is illustrated in Fig. 6, and consists of a 6 in. square of $\frac{1}{4}$ in. fretwood, surrounded on top with a framing of $\frac{1}{8}$ in. wood, to form the tray. Small pieces are

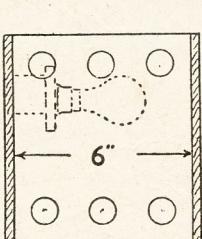


Fig. 2—End view

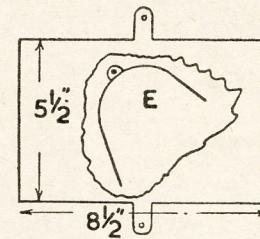


Fig. 3—Size and shape of metal reflector

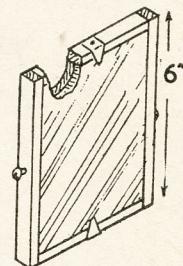


Fig. 5—Mirror holder

avoid cutting off any light rays. Really the matter is almost optional, as the chances of any rays being cut off by the edge of the case are weak.

With the fitting in place of the brackets, the frame for the mirror can be made. This is shown in Fig. 5. Make the frame to the height given, the width should be measured off between the brackets, to better ensure a good fit. Use $\frac{1}{2}$ in. wood for the sides and $\frac{1}{4}$ in. wood for the top and bottom pieces, and make them $\frac{1}{8}$ in. wide.

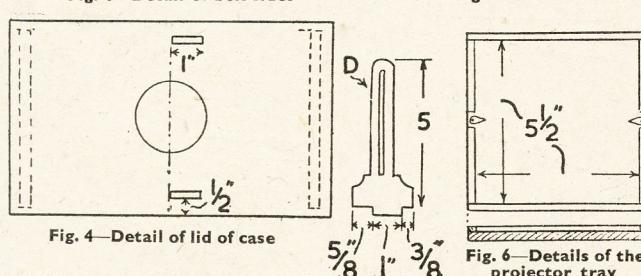


Fig. 4—Detail of lid of case

There is a reason for this, of course, the reason being that a reversal of the picture would appear on the screen, and often this is undesirable, especially where lettering is concerned.

This reversal can be prevented by using a translucent screen, the picture being seen on the reverse side of the

of the brackets, the frame for the mirror can be made. This is shown in Fig. 5. Make the frame to the height given, the width should be measured off between the brackets, to better ensure a good fit. Use $\frac{1}{2}$ in. wood for the sides and $\frac{1}{4}$ in. wood for the top and bottom pieces, and make them $\frac{1}{8}$ in. wide.

cut out in the framing, one each side, as in the diagram, in which tiny brass or tinplate clips can be nailed, to press on photos or picture cards, and keep them down flat for projection.

Provision has been made for objects up to $5\frac{1}{2}$ in. square to be thrown on the screen and, of course, when ordering the lens it will be necessary to state this to get a suitable one. Lens covering a smaller area can be employed, but this will limit the scope of the instrument proportionately, and when it is recollected that most views, except photos, are postcard size that one collects, the full size lens is infinitely to be preferred.

When using the episcope take care to adjust the mirror, and see, by looking through the lens, that no part of the reflector trespasses on the light rays coming from the picture to the lens.

If you want a simple novelty for the home, try your hand at A CURIOUS CACTUS

THE flowers that bloom in the Spring may, as yet, be but a pleasant anticipation, but with this curious plaster 'cactus' in its colourful pot decorated with 'peasant-art' designs, one can have a gay patch of colour throughout the dull winter months, and beyond. Fig. 1 shows the idea at a glance.

It is as well to start off with the wooden pot. Fig. 2 shows the parts required, cut from $\frac{3}{8}$ in. solid wood. The curves at the bottom are not very critical. They can be drawn in with the lid of a suitable round tin, for example. Ignore, for the moment, the 'chain' lines at (X) and (Y).

Assembly

A glance at Fig. 1 will show how the parts are assembled. Use long thin panel pins, taking care not to split the wood. In order to get a level top and bottom it will be necessary to lay a new sheet of glasspaper on a flat surface and rub the little wooden tub on this.

Part (Y) represents the bottom, and is, approximately 3 in. square. The edges will, obviously, have to be bevelled, though no special accuracy is required. It is always as well, however, for the sake of practice, to do every job as well as possible even where, as in the present case, the part does not show. Bottom (Y) will be a forced fit. Top (X) is about $3\frac{3}{4}$ in. square and $\frac{3}{8}$ in. thick, similarly bevelled and forced in. This top, however, has a $\frac{1}{2}$ in. hole drilled in the middle.

Like China

Punch in all nail holes and fill with plastic wood. The pot is to be enamelled so it looks, if possible, like china, and it is a great mistake to think that paint or enamel will fill up small imperfections in the same way as a level sea hides a rocky and irregular sea bed. Paint all too often reveals imperfections, so this little pot should be well glasspapered,

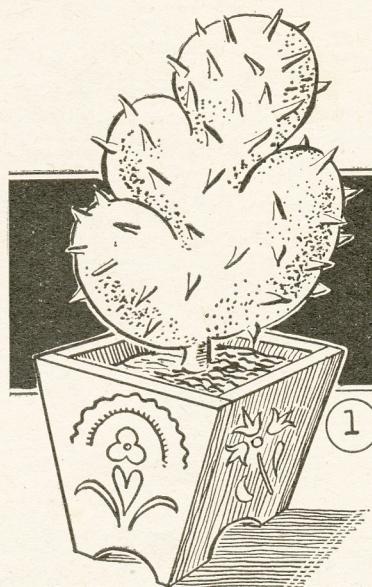


Fig. 1—The completed article

and the grain filled with woodfiller if at all open. It may, at this stage, be given a preliminary coat of paint.

The 'Cactus'

Whilst this is drying, we can proceed to make the 'cactus'. First, cut out a thick cardboard shape somewhat as in Fig. 3. It should be about 5 in. high and 4 in. wide but there is no need whatever to square off the diagram. A freehand shape will be quite enough. Note that the loops meet each other practically at right angles.

Take some spent matches and poke them, as in Fig. 3, half-way through the card shape. Get some wire and twist it all over the place as indicated. Do this

both sides. The idea, of course, is to provide a 'key' for the plaster which is to be applied.

Take a dowel or twig about $\frac{1}{2}$ in. diameter and about 3 in. long. Split the end (or you can split the whole stick) and insert the end of the cardboard shape, as in Fig. 3. Bind the split stick just below the insertion. The lot will look like a fan.

Obtain some plaster of paris. Pour a little water into an old bowl and sift some plaster on to the surface of the water, a little at a time, stirring gently until you have a mixture that is neither too sloppy nor too thick. Never add water to plaster.

Apply the plaster to the card shape a little at a time. The idea is to model a cactus shape. It is presumed, of course, that the maker will have a general idea of what this type of cactus looks like. There is no need whatever to aim at botanical accuracy. In any case, cacti are of such remarkable shapes that 'anything goes'.

In Plaster

This type of cactus will have a fairly uneven surface, though flattish, with thicker edges. Most readers will not need reminding that plaster soon sets (a matter of a few minutes) so it is better to work the job in two stages: first to get a preliminary coating of plaster on and then with fresh plaster, to do the modelling. Clean out the bowl immediately, before the plaster hardens on it.

In advance you should collect a supply of thorns or, failing this, some pins with fairly large heads. Before the plaster is quite dry, push in the thorns (or pins) (see Fig. 1). The pin heads will make pimply-looking marks. Do not, of course, have the pins inserted point outwards!

(Continued on page 62)

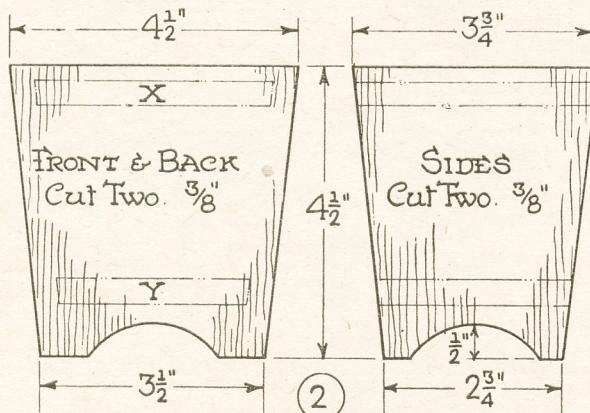


Fig. 2—Parts forming the wooden holder

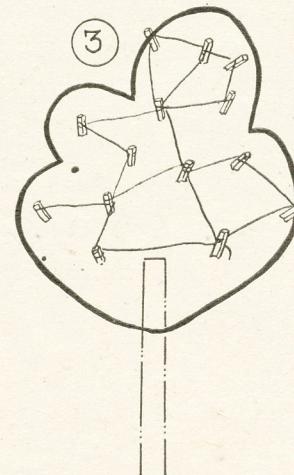


Fig. 3—The foundation for plaster

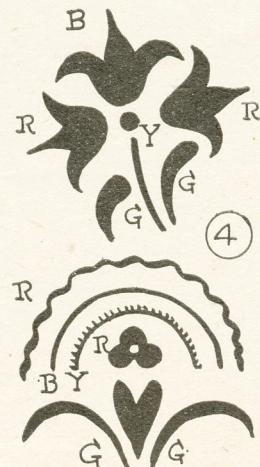


Fig. 4—Decoration styles

The handyman with a fretsaw can design and make this PORTABLE READING LAMP

THE lamp shown in our sketch on this page would be very suitable for a desk or small side table. Anyone with sufficient patience to avoid all hurry can, at home, at small expenditure, produce a lamp, such as shown here, that will, nine times out of ten, be mistaken for the product of a professional rather than of an amateur.

Lamp shades of all shapes and sizes can be bought made from plastic material or parchment. But how very much more satisfying it is to be able to say 'I made the whole of this lamp, shade included from materials I had by me and a sheet or so of paper'. It is quite possible to make from cardboard and coloured paper a shade that will be as beautiful as one of leaded art glass. Of course, there is a difference, but it is very much less than would be imagined, and is hardly noticeable when the shade is illuminated.

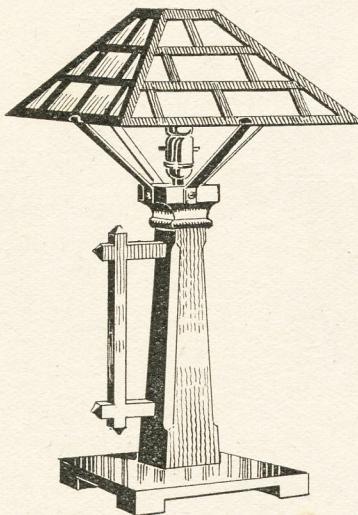
Cardboard Cutting

Cardboard properly formed into angles and braced and covered with the paper becomes very rigid. Like a roof truss, for instance, its strength lies more in its shape and bracing than in the amount of materials employed.

The tools necessary are those required for home carpentry, and above all a sharp pocket-knife with a large handle should be provided for cutting the card. It is very necessary to keep a sharp point, or the edges of the cardboard will be irregular and frayed. Old razor blades if made to fit into a suitable handle are ideal if a knife is not available.

The Pattern

The first thing to do is to lay out the pattern for one of the sides of the shade. This should be done on a flat and rather heavy sheet of paper, after which it should be carefully cut out with a sharp knife. A sheet of cardboard measuring 18in. by 16in. should be obtained; not



too heavy or the cutting will be found difficult.

Select at first a light-weight card and test it by lightly scoring on one side with the knife and bending it to a right angle, the knife mark always being on the outside of the bend. Place the paper pattern on the cardboard and mark it off with a sharp pencil.

Then move the pattern over one space, that is, move it until one edge exactly coincides with the outer pencil line of the first position, and mark off again, continuing the process until the fourth and last side has been marked off, seen in the working diagram, Fig. 1. In this manner we obtain the complete pattern on our sheet of cardboard. The dotted lines in the diagram indicate those to be scored with the knife for bending.

Cutting Sharp

The cutting should be done over a hard board or on a sheet of metal or stout glass. Do not press too hard when making the first cut into the cardboard, as the hand or the straightedge is more apt to slip at this stage than afterwards when the first cut has reached some depth. This is all a matter of experiment, and connected with the thickness and quality of the cardboard used.

When all the cutting has been done,

place the line of bend directly over the sharp edge of a table or board and the straight-edge (a ruler will do) over that portion remaining on the table. Then bend gradually all the way along the line. The last edge of the fourth section has a connecting strip which should be covered with glue and then fastened to the first edge of the first section.

The extra strips (A) at the top and bottom should finally be bent inwards to a horizontal position and fastened with a paper fastener at each corner. The corners of all bends should be reinforced with gummed paper strip or tape. The entire framework should now be painted over with dull black solution such as black-board paint or ordinary dense black drawing ink.

Now select some paper of the desired colour, and before attaching it to the cardboard frame test the effect after dark by bending it round the light. Generally, in a tapering shade such as we are making, the upper portion which is nearest the bulb appears brighter than the lower portion. In consequence a very pleasing and attractive blend of shade is obtained.

The Stand

In making the stand, prepare the base first. Then glue on the square blocks at each corner, taking good care to keep all corners sharp and square. The corner blocks may be $1\frac{1}{2}$ in. square and, like the base should be $\frac{1}{2}$ in. thick. A 1 in. square of wood should be cut from the centre of the base so that the tenon on the foot of the upright stem of the lamp can fit in and be glued securely.

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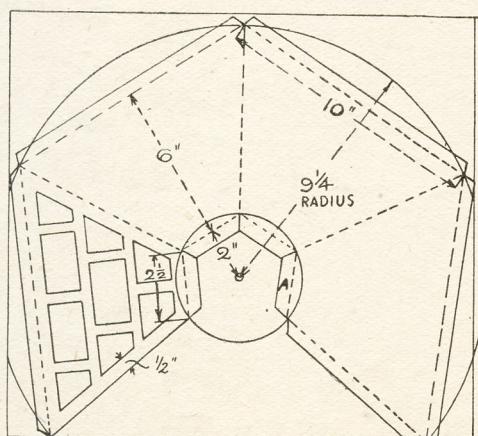


Fig. 1—How to lay out the shade pattern

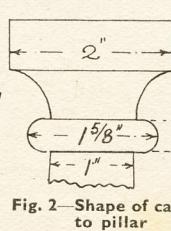


Fig. 2—Shape of capping to pillar

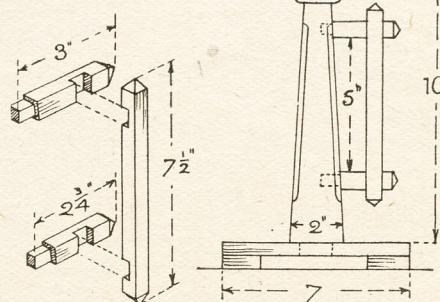


Fig. 4 and
Fig. 5—Handle
shape

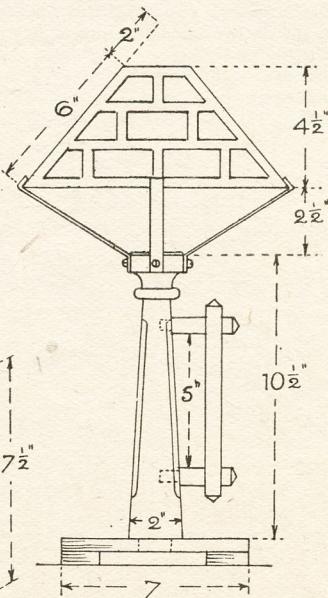
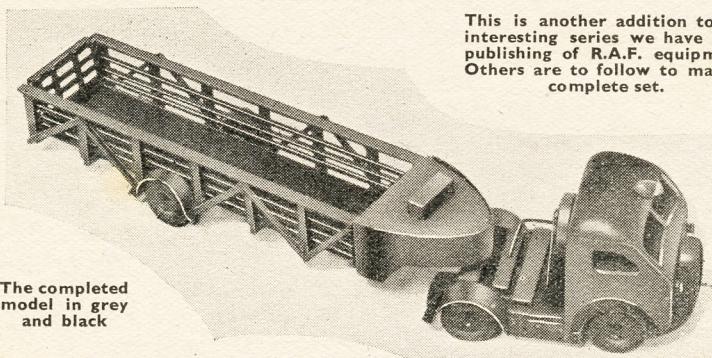


Fig. 3—Elevation with dimensions

Full size patterns on page 62 for this miniature R.A.F. Trailer MODEL "QUEEN MARY"



The completed model in grey and black

This is another addition to the interesting series we have been publishing of R.A.F. equipment. Others are to follow to make a complete set.

MANY of us have been intrigued by the rather unusual lines of the long 60ft. vehicles known in the Royal Air Force as the "Queen Mary". Tiny models of these are quite simple to make, but need careful study to get the correct height and swing of the body part. They follow the lines of the previous articles we have had on making miniature vehicles. The illustrations of the parts on page 62 are full size.

Cab and Motor

Start with the cab and motor first, which needs two side pieces $2\frac{1}{2}$ ins. long with $3/16$ in. by $\frac{1}{8}$ in. wood. There are three cross-pieces of $3/16$ in. square by $\frac{7}{8}$ in., and are set in as shown at No. 1 in the details herewith. A piece to go right across from side to side and measuring $\frac{1}{8}$ in. by $\frac{1}{8}$ in. is placed $\frac{1}{8}$ in. from the end. This takes the head of the trailer and needs a small pin sticking through the centre about $\frac{1}{4}$ in. high.

The floor (part No. 2) is from thin plywood $1\frac{3}{8}$ ins. by $1\frac{3}{8}$ ins., so that it overlaps the bearers slightly. Note the slight cut-away for the wheels on each side and allow $\frac{5}{8}$ in. clearance for the wheel itself. The back (No. 3), made

next and from the same type of wood, measures $1\frac{3}{16}$ ins. by $1\frac{1}{4}$ ins. Note the space suggested for the seat. Cover this with passe-partout and continue up the back for $\frac{1}{8}$ in. There is a fairly large window in this type of vehicle to give ample clearance in the back. Make this $3/16$ in. by $7/16$ in.

Sides

Two side sections (No. 4) are needed, as shown; the base is $1\frac{3}{8}$ ins. by $1\frac{1}{4}$ ins. high to correspond with the back. Note that the front goes up straight for $\frac{3}{8}$ in. and then recedes back by $\frac{1}{8}$ in. The window is fairly wide and measures $\frac{1}{8}$ in. deep by $\frac{5}{8}$ in. A small cut-out, $\frac{5}{8}$ in. across, is left for the wheel.

The roof is next and made from $\frac{1}{8}$ in. wood to enable it to be well sanded off to the shape shown in sketch No. 5. The measurement is the same as the floor except that it is shorter—due to the slope back of the front screen. If you wish to fit a steering wheel this should be put in now to save trouble later.

Base and Radiator

The lower base of the front is next and measures $1\frac{3}{16}$ ins. by $\frac{3}{4}$ in. The top

section is cut away to make the front windscreens and can be done in thin wood or card fretted out. Line with transparent sheet (see No. 6).

The front radiator is made separately, as shown in No. 7 and should measure the width of front and reach to just below base of window. Bumper part and radiator can be made and attached after fitting to the body. Lamps can be made from large pins and radiator can be made from 'OO' gauge railway sheeting.

The wheels are $\frac{5}{8}$ in. diameter and fitted on pins. Mudguards should be made from thin tin and fixed on with balsa cement or plastic wood. Note the position of the petrol tanks made from $\frac{1}{4}$ in. dowels and held with $\frac{1}{8}$ in. cardboard straps. Rear wheels are fitted with thin cross struts of wood.

The Trailer

The trailer is fairly straightforward. The upper plate (No. 8) is made from thin plywood and has an overall length of $5\frac{1}{2}$ ins. and width of $1\frac{3}{8}$ ins. The sides are cut to $\frac{1}{8}$ in. wide. The base is the same width, not cut in the centre and measures only $5\frac{1}{4}$ ins. long. In the top end, nearest the cab section, is a piece of wood $\frac{1}{8}$ in. thick and $1\frac{3}{8}$ ins. wide by $\frac{3}{8}$ in. deep. A stiff cardboard cut to the shape shown should now be fitted round, as in No. 9.

The side struts can be made from $\frac{1}{8}$ in. square wood, spaced out, as shown, and the bearers are placed underneath the floor. Cross sections and the long bars are from the same wood. These are all fitted with balsa cement. The depth of the sides is $\frac{3}{8}$ in. Follow the design shown in No. 10. Wheels are fitted with pins and mudguards are held with struts passing underneath. It is fitted to the drawing cab by a small piece of wood with a round hole to take the pin set in the cab section. Paint the model in slate grey or olive green.

The patterns on page 62 are full size for marking onto the actual parts.

Reading Lamp—(Continued from page 52)

The main stem, which will require some little care in the making, can be worked by means of a small tenon saw. Set out the profile given in Figs. 3 and 4 on to a piece of 2in. square hardwood 11in. long. Cut down the tapered part as far as the necking, and then round this latter with the fretsaw. Work in also the hollow moulding above it.

Tenon Joints

Next cut the tenon on the lower end to fit the square in the base. The small mortises for the handle are $\frac{3}{8}$ in. square and about $\frac{1}{2}$ in. deep. It would be best, perhaps, to mark these out and cut them in after the actual parts of the handle have been made and assembled. The proportions of the parts forming the

handle can be seen in Fig. 3, while the method of halving the three pieces together, is shown in the detail, Fig. 4.

Note, from Fig. 3, how the haunches of the tenons must be sloped to meet the taper of the stem into which they fit. The halvings of the parts of the handle can be cut in with the fretsaw while the chamfered or pointed ends are cut with the sharp penknife. Wood $\frac{5}{8}$ in. square should be used for the handle.

The four upright angles of the stem are to be chamfered, this work being best done with the penknife after carefully marking out on all four sides and checking up then the actual widths of each face of the chamfer.

For wiring the lamp, a hole should be drilled through the centre of the stem.

If a sufficiently long twist drill cannot be obtained for this, or the work perhaps considered rather too difficult to undertake, then it would be best to get this work done by an experienced carpenter or joiner.

Shade Support

The lamp shade has to be supported by four stout strips of brass or copper, or again steel strip would answer well if done over black. Each should be about $\frac{1}{2}$ in. wide and angled up at one end to take the edge of the shade, as shown in Fig. 3. Bend and drill at the other end to take the fixing screws.

Clean all the wood parts and stain and oil up or wax to match the furnishings of the room in which it is to become a part.

Hooks, oiling, stoppages, etc., are part of the handyman's HOME REPAIR JOBS

THE handyman about the house is always a welcome visitor—and what with the much overdone specialization in our mass production industries, he stands a far, far better chance of a good and comfortable job when he grows up. Offer to do some odd craft jobs, for there is always some little job that needs your expert attention.

Most general are what we may call the 'hooks and eyes'. Nearly every room in the house needs a special hook somewhere. In scullery or kitchen—the workshop of the house—the demand for hooks is tremendous. All brushes, dish-mops, dusters, and most kitchen implements, such as egg-whisks or sink cleaners, need a small hook at the end of the handle, and a larger cup-hook to hang them on.

Hooks Wanted

Done this way, everything is either in sight or can easily be found. The lavatory needs hooks for coats, duster or cloth, and brushes. Soap dishes may often be kept on hooks in the wall, leaving more space below. In the bathroom, the medicine chest needs proper support; we take it that you can make one, if there is space available!

In the dining room concealed hooks are often useful. Almost certainly there will be trailing wires to the radio set, which would be better if caught into hooks at suitable strategic points. There may be a brass toasting fork; a pair of bellows; or a small shovel, all needing the tidiness that strong neat hooks can offer.

You may think that there is not much fun—and not much skill needed, to do these jobs. But you may want a few in your own room and this special job could be done at the same time. There will be a few over.

Replacements

Study the best ways of putting hooks into different materials. You can even get a hook into concrete or brick, if you use the special implements you see advertised. But sometimes, an existing hook needs improvement, which is a more tricky job. For a screw that has wobbled in its hole until it is loose, you must either use another and slightly larger screw, or re-screw the old screw again. To do this, you can (in wood, as a rule) dip the screw thread in some adhesive, and twine a thin strong thread around it, as you replace it. Properly done, this is as good as new.

Oiling

Next comes 'cleaning and oiling' as we call it. Where there is a baby carriage, there is a need for the oil can. Most women seem to be deaf to the horrible squeaks that come from a pram wheel that has got rusty in a shower. But the

neighbours will be thankful for the regular use of your oil can.

The family sewing-machine needs a spot of oil every six months.

Locks and Latches

Most locks and latches need oil—especially in winter months. Hinges of metal windows need oiling. So do hinges of garden gates. But never oil any sort of electrical gear, unless you know precisely what you are doing—as for example, the vacuum cleaner. These implements do need a spot of oil at some points. Every different make needs special attention—study them first.

Never oil switches or taps—and go steady with clocks. The lawn mower will always be grateful for oiling—so will the user!

If your folks have a garage, the hooks and eyes, also the oiling, will often get casual attention. But there is often a place for more. And if you have any contact with a small stores, you will be surprised at the quantity of stock that can hang from the ceiling (if the ceiling is strong enough!) on scores of suitably-placed strong hooks. In a village, a young craftsman can become highly popular, when armed with hooks and screwdriver!

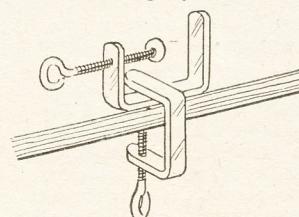
Obstinate Screws

Many repair jobs require the removal of old iron nuts or screws—but the trouble is usually that the screw or nut has rusted fast. There are various dodges to loosen such items; and invariably persuasion is better than sheer strength.

If time permits, a sluice of paraffin oil often helps. If the object is small, you can, perhaps, immerse it over-night, in a bath of paraffin. But do this only with metal objects that have no attachments that would be ruined by oil. Never put rubber or plastic components into oil baths.

Vice from Two Clamps

If you possess two fretwork clamps, you can easily rig up a vice as shown in the sketch. One clamp is used on its side and is secured to the bench by the other. Screw tightly to the bench



to hold firmly, and you have a useful little vice for small work of a light nature.

In the morning, a slight tapping may prove that the awkward nut is now sufficiently loose to unscrew. But if it is still obstinate, then we turn to our next 'persuader' which is suitably-applied heat.

Obviously you must wipe off, after draining, all surplus paraffin or water or oil. Sometimes the heat from boiling water will do the trick. The heat expands the metal—also the rust, and this cracks. When it is cool again, it will unscrew more easily.

Hot Water Cure

Hot water is excellent for shifting glass stoppers of bottles which have stuck. You should not use force or you may break the glass. This dodge is welcome news in the family kitchen, because a meal may be delayed for want of getting the bottle open.

Simply get a bowl or pan of hot water. Holding the obstinate vessel inverted, dip the neck cautiously again and again into the hot water. Remember the heat will make it expand. You do not want to crack it—but that may happen, especially in winter, if the glass is very cold. Go steady!

After a minute or two, the neck will expand and leave the stopper—being a trifle cooler—and you can withdraw it. To prevent the stopper from sticking again, give it a smear of fat or some kind of edible grease.

Some screws cannot be treated thus, for they may be deep in timber—such as a screw in a broken hinge. As the hinge must be removed to allow the new one to be fitted, the old screws may be in the way. Sometimes a hot soldering iron, held against the head of a rusty screw, will expand it enough to make it loose.

In very obstinate jobs of this kind, use a brace and bit to remove the screw head by drilling it away in shavings. The new hinge will then go on the same place, missing the still-embedded old screw by a fraction of an inch.

Rusted Nuts

Again, the rusty nut will at times never respond to persuasion. Then, if the situation permits, use a hack-saw. Drop on a spot of machine oil and saw the bolt through, just at the back of the nut and including—usually by necessity—the back of the nut itself. Then the bolt can be struck out by use of a hammer and steel pin, perhaps inserting a cold chisel edge under its other end, at the ball cap.

For these reasons, suitable washers should usually be added when placing bolts. They give the repair man a far better chance of effecting replacements without undue loss of his valuable time. The day may come when all these parts will be supplied ready chromium-plated, when this ancient problem of rusted fittings may then disappear.

Suggestions to the radio enthusiast on ways of USING EXISTING COILS

It is likely that many radio constructors have ready-made tuning coils to hand and these can usually be brought into service in a home-made receiver with success. But no standard method of indicating the correct connexions is employed, and if the instruction sheet has been lost or the coils have been taken from an old receiver, difficulties may arise in wiring up, especially as some coils have as many as eight terminals.

Identifying Connexions

Some popular coils have a moulded base with small terminals. If the terminals have markings similar to those shown in Fig. 1, connexions can be identified easily. (A) shows the windings of the most popular type of coil for Long and Medium Waves, with Reaction and Aerial Tapping. Connexions are as follows: (G) to Detector Grid Condenser and Fixed Plates of Tuning Condenser; (A) to Aerial; (W/C) to Wavechange Switch; (E) to Earth; (R.C.) to Reaction Condenser, and (P) to Detector Plate. (The second terminals on both reaction condenser and wave-change switch will be connected to earth). With this type of coil no reaction will be obtained if the leads to the reaction winding are accidentally reversed.

Another popular type is shown at (B). Here, a small separate winding is present and this can be used for either Aerial Coupling or coupling a previous valve to the detector. (G), (W/C) and (E) connexions will be as already mentioned. Terminal (R) denotes the Reaction Winding and is connected to the moving plates terminal of the reaction condenser; the fixed plates terminal of this condenser is connected to the detector plate terminal.

If no valves are used before the coil, connect (P) to the Aerial and (H.T.) to Earth. If a valve is used, then (P) is connected to the Plate of this, and (H.T.) to High Tension Positive. (The H.T. supply then passes through this separate winding).

Numbered Connexions

Quite a number of coils have terminals or leads which are colour-coded or numbered and there is no standard system. But examination or testing can always reveal the correct connexions because no matter what the size or form of the coil, each winding has to perform certain functions.

Fig. 2 shows the way in which the majority of Long and Medium Wave Coils are wound. (If the coil has a metal screening can this should be lifted off for examination). In Fig. 2 the ends of the windings are marked to agree with (A) in Fig. 1, and are connected in the same

way. These ends will pass down inside the former and go to the various terminals. Therefore, by examining the coil in conjunction with Fig. 2, it will be possible to see which terminals form the various connexions and the terminals may be marked, or the numbers by them noted down.

Coils without bases, or with tag or coloured connexions, can be treated in the same way. The top winding will usually be of silk or enamel-covered wire, and will have about 60 to 90 turns, depending upon diameter. The next winding (reaction) will be smaller and probably of thinner wire. The bottom section will have about 200 to 300 turns and may be wound in two or more piles. (Occasionally there may be one pile only here, turns being placed in a wave formation by machine).

Coupling Windings

Where coupling windings are included (B, Fig. 1) these are usually wound upon a strip of insulating material which has been placed round upon the windings, shown in Fig. 2. But sometimes the winding may be on the former itself, and in each case it should be quite

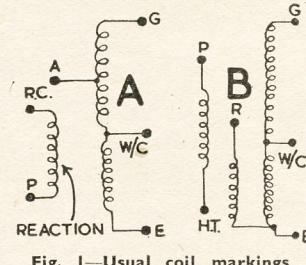


Fig. 1—Usual coil markings

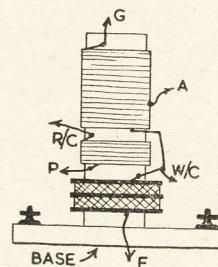


Fig. 2—How windings are arranged

easy to follow the ends to see which terminals form the connexions.

As results are slightly better when the coupling winding is connected the proper way round, the leads taken to the two terminals from the other parts in the set may be reversed, if required.

Resistance Measurements

If a meter is available, measuring the resistance between various terminals will show what windings are connected. The Medium Wave Winding, consisting

of comparatively few turns of fairly thick wire, will usually be about 2 ohms or 3 ohms. The Long Wave Section has many turns of thin wire and will be 15 ohms to 20 ohms or so, while the resistance of the reaction winding will usually lie between these figures.

If no meter is available, testing with a 1.5 volt dry cell and headphones will show whether there is any connexion between various terminals. For example, it will probably be found that there is a circuit through the windings between two terminals, but not from either of these terminals to any of the others. These terminals must, therefore, go to a small isolated winding, which will be used for reaction in a coil of the type, shown at (A), Fig. 1.

Receiver Test

A further method of determining connexions is to use the receiver itself for testing the coil, and a one-valver may be made up from the wiring plan given in Fig. 3. In such a receiver any type of coil can be used with success. (It is also possible to add amplifying stages, of course, for speaker reproduction).

When wiring up, leave the leads (A), (E), (G), (R.C.) and (W/C) long enough

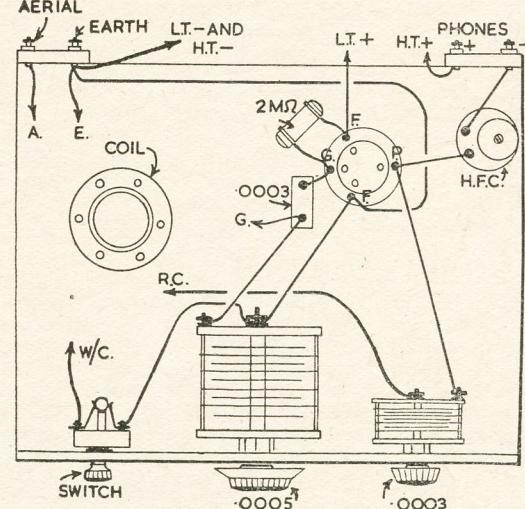


Fig. 3—A 1-valver suitable for any type of coil

to reach to any of the coil terminals, but leave them all disconnected. Now connect phones, batteries and earth, and take the aerial to the fixed plates terminal of the .0005 mfd. tuning condenser. Now touch leads (G) and (E) on the coil terminals until a long wave station is heard and can be tuned in properly. When the terminals are found, connect these leads temporarily.

The Wavechange Switch is now set with contacts closed and the lead from it

(Continued foot of page 56)

Some of the interesting things to undertake in CARVING BONE

IT is quite easy to pick up a set of old antlers from any junk shop for a few pence, even in these times. Also it is surprising how often such objects will appear when attics or junk rooms are turned out.

With the aid of a pen-knife, rasp or file and a hack-saw, it is quite possible to utilize the antlers into making ornaments, buttons, etc., and make quite a profitable hobby. In fact, in the Highlands, bone carving in the fashion described is very popular.

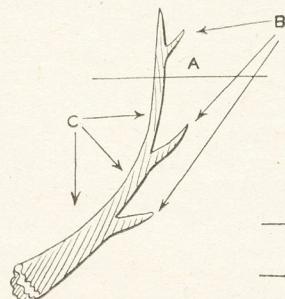


Fig. 1—The antler complete

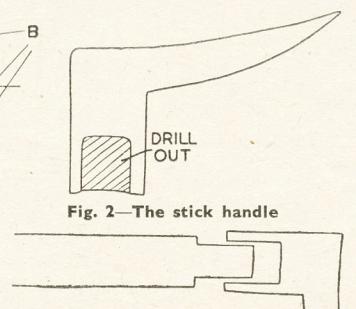


Fig. 2—The stick handle



Fig. 4—Shapes to use, with shaded portions to be filed away



Fig. 3—Stick fits into handle

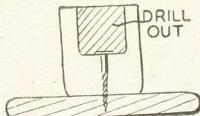


Fig. 6—Details of match holder

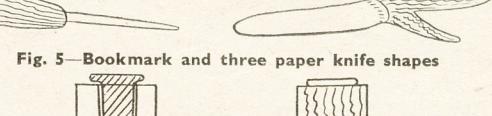


Fig. 5—Bookmark and three paper knife shapes

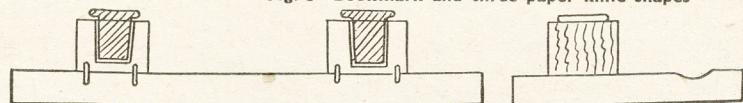


Fig. 7—Front and end view of ink stand and pin-rack

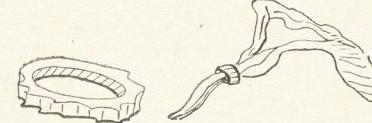


Fig. 8—The cut toggle and (right) in use

The antlers may be divided into three sections as shown in Fig. 1. Part (A) is the tip, and this can be utilized for walking stick or riding crop handles. Parts (B), known as the 'points', may be used for making paper knives, book-marks, etc. The main trunk of the antlers, part (C), for making toggles, match or spill holders.

Using Coils—(Continued from page 55)

tried on each terminal. When on the correct one the coil will be switched to Medium Waves. If this effect cannot be obtained, then reverse over the leads (G) and (E). This will ensure the tuning coil is connected the right way round and either Long or Medium Wave reception will be possible upon operating the switch.

The Aerial is now transferred to the Aerial Terminal and lead (A) tried on each of the remaining coil terminals or tags. When on the proper terminal, tuning will be sharpened and good reception should be obtained. Some

Antler horn cuts very easily, and most of your work will be done by a file. There is one drawback and that is the rather unpleasant smell when the horn gets hot through working. But that is really something and nothing!

Walking Stick Handle

To make a suitable handle for a walking stick select a suitable piece from the tip of the antler. Or a piece may be found in the centre of the branch, in which event the top will need plugging with plastic wood (see Fig. 2). Drill or

the type of knife you have in mind. Either end may be placed in a vice, after being wrapped in scrap material. Then carefully file away the soft horn until a knife blade of the suitable thickness is reached (see Fig. 4). It should be noted from this sketch that either end of the horn may be used as the hilt or handle.

Fig. 5 shows some typical book-marker and paper knife designs, all of which are equally easy and interesting to make.

Match Holder or Spill Holder

For these pieces of work select a

bore out the centre of the soft horn to a depth of 2in. Select your stick or cane and trim it at the end, as shown in Fig. 3.

Plug the head of the stick into the base of the horn handle and seal with casein cement, allowing 24 hours for drying. Polish the handle in the usual way. If necessary a silver or brass ring may be placed over the joint but that is a matter of personal taste.

For paper knives, etc., saw off a point at the junction with the main branch of antler to the required length. This may vary from 2in. to 6in. or 7in. according to

coils have optional aerial tappings; if so, select the one most suited to your aerial.

There will now only be two terminals unused, on most coils, and connect the lead (R.C.) to one, and a lead from Earth to the other. If this makes reception worse, reverse these leads, when everything will be in order.

If the reaction condenser connections shown in Fig. 3 are followed it will be impossible to damage the coil or any part of the set, including phones, no matter how the coil is connected. But including the reaction condenser be-

piece from the main branch of the antler, to the depth you require. Bore out the centre of the branch to the required depth then countersink a screw through the centre and into the baseboard (B), shown in Fig. 6. A pair mounted on a suitable baseboard make excellent ink-well holders as seen in the diagram at Fig. 7.

For the Boy Scout or hiker, an excellent toggle may be made by taking a section of the main antler stem. Bore out the centre so a ring is left of the outside hard horn. This slips over the end of the scarf or neckerchief, as shown in Fig. 8.

tween coil and earth (instead of between detector and coil) could result in a short-circuit to the H.T. supply, with consequent damage to headphone windings.

The reaction condenser may equally well be of .0005 mfd. capacity. Any small High Frequency Choke can be used, and if the set is to be in regular use a second small switch should be included in one Low Tension Lead to switch off the valve filament. If coil connexions have already been found, merely wire up in accordance with these.

Your work will be much improved by following these HINTS FOR CRAFTSMEN

Do you wonder sometimes whether your work is as good as it should be? If you are a newcomer to fretwork and model making, you should remember to ask yourself that question periodically. If you have been, as is the case with so many readers, using the fretsaw for a number of years, then the question is equally applicable, and should periodically be turned over in mind so that a definite answer of 'yes' can be given.

To be very candid, we are surprised from the photographs we receive, at the standard of work with which some readers are satisfied. We can quite understand that the beginner is delighted at his first result, but are also afraid he really takes no great steps to ensure that the next piece of work he undertakes, is very much better. It should be. It should be the aim of all to improve progressively with each model or piece of fretwork or toy that is done.

Progressive Improvement

Remember, there is always room for improvement. The more expert and experienced one becomes, the more keen one should be to obtain a standard of perfection, which is the ultimate goal of all real craftsmen. The instructions for the making of, say, a model, are the same for all. It is the actual individual ability of the worker which can create just a rough-and-tumble result in the one instance, and a beautiful and attractive piece of work in the other.

The difference may not have been in the ability of the two workers concerned. It may lie in the fact that one is content with a slap-dash type of work, and the other is not satisfied with anything except the best. One worker may be in a hurry to see the job finished, the other will realize that extra time is worth while in getting a better result. It will happen right through the job.

Careful or Casual

The casual fellow will apply glue thickly so it squeezes out and looks unsightly and dirty when the parts are put together. The other worker will apply the glue thinly, evenly and carefully, holding or cramping the joint together so that its strength and cleanliness make a good job. Or one fellow may hammer a nail in and leave dents in the wood to show what he has done, and which paint afterwards will not cover. The careful worker will use a punch, even if it is only a filed-down nail, so that the head is knocked home carefully and the paint afterwards cover it without anything being shown.

Then, too, having finished one model, how often do we spend time studying it to see whether it could have been improved, or to make a note of some different method of work which could

be introduced into the next job to be undertaken. In these days of rush, the craftsmanship of our readers should provide a pleasing leisure with time well spent. There is no need to complete a whole thing in one evening just because you have to tear away and do something else the next evening.

Thought and Work

Great artists do not sit down and splash off a monument to their creative ability without thought and care and patience. They study, too, not only their own work, but other artists' and craftsmen to see whether ideas cannot be improved upon, other peoples' knowledge used to their own advantage. The models which you see in shop windows are worth a great deal of study. You can see the keen craftsman doing this, in the windows of the cities and towns where such things are shown. Careful handling is also another necessity if you are to

avoid breakages or greasy marks in the final result.

The Real Craftsman

Possibly the most popular work today is in the making of galleons, and here, extreme patience, apart from ability is needed. But the same craftsmanship should also be put into an ordinary toy which the youngster is apt to use and knock about. There should be the actual joy of making, for the craftsman, and the knowledge that he has put his best into the work to get the best finish.

We would so impress on our readers that every piece they do, that every model they make, every article of work undertaken, should be of a much better standard than a previous one. The keen craftsman is never satisfied with his work, but is always endeavouring to attain as near perfection as possible. Let us mention a few practical details, taking as general examples the models,



TWO GALLEONS

OUR designs for the romantic old-time galleons are being made everywhere, by people of all ages and both sexes. Here are two further examples of the beautiful results which can be achieved with patience and craftsmanship. At the top you see George R. Day, a regular soldier of Coulsdon, Surrey, and the model he has made from



5,750 used matches! Apparently the Sergeant's Mess produced a lot, but even so the model took six years to complete. The little lady with the model is 21-year-old Patricia Crosby of Grays, Essex, who has twice running won the Hobbies Competition run by the Central London area of the Post Office. Offered a pair of silk stockings for her birthday she said she preferred a set of carving tools! Splendid, but both equally difficult to obtain.

fretwork, etc., which can be completed from the design sheets given in these pages alternate weeks.

The matter, of course, applies equally to the instruction articles in these pages. Read the whole of the instructions right through before you begin. See you have all the necessary materials at hand, and that the tools required are available. If you are using the fretsaw, have a spare dozen blades handy in case one breaks. See you have several grades of glass-paper available, so that having partly cleaned the article with a coarser grade, you can finish with a finer surface.

Read the Instructions

Having read the instructions, visualize in your mind, exactly what the work is going to look like, not only as a finished job, but also in its various stages of construction. Too often, beginners will put the whole thing together, only to find they have omitted a part which cannot be inserted, and the whole job has to be undone. If the finished model or toy is to be painted, take notes of any pieces which must be so treated before construction is completed.

For instance, if you are making a model coach or motor car, remember to paint and upholster the inside before the roof or last side is added. Very often it is impossible to go right ahead with the consecutive construction. Parts may have to be made as units for their final putting together. Think these out before you start, so you may still be able to have work in hand to do whilst other parts are waiting further attention.

Test and Measure

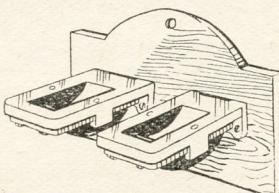
As an example, some of the smaller pieces may want gluing together, and whilst this glue is setting hard, you should have other work to do. If, therefore, you cut out all the parts and

For Pokerwork

BORE a hole through a piece of round wood about 1 in. diameter and 3 ins. long, and push a metal skewer through it. Now put a rubber handlegrip over the wood and this will be a useful tool to those who do pokerwork on calendars, or make burnt mottoes on whitewood.

Transformer Shelves

THES two useful little trays form handy receptacles for holding smalls and bolts or little odds and ends.



The two parts are halves of a split wireless transformer casing, usually made of bakelite or similar material. When taken apart and cleaned, the holes in the base portion are suitable

clean them all ready for gluing, then further operation will be held up because there is only this one job waiting to be done. Always have measuring tools handy so you may check out correct dimensions when fitting pieces together. A pair of dividers or compasses, with pencil, steel rule and squares, are essential to the good worker.

A toy, for instance, may be excellently made and finished in general construction, but the whole thing will fall to pieces if the mortise and tenon joints which hold it together have been badly cut, and allow the parts to fall away in general collapse.

Backing Frets

In some of the fretwork designs shown, you may desire to back up the actual fretted parts. See you have the right type of material in sufficient quantities. It may be leatherette backing material or even stiff coloured paper. Mark, by measurement or trial, the actual sizes and shapes needed, and then cut the material correctly to go behind the part being backed. Now remember to fix it in place before the rest of the construction is undertaken; otherwise it may be impossible to get the backing material in position.

A Suitable Finish

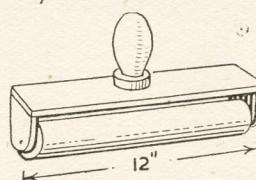
In this connection, too, you must have made up your mind what finish is to be made to the work in question. If you are going to stain the fretted portions, then this must be undertaken before backing material is glued on; otherwise your stain will overrun on to the backing, and spoil the whole job.

One of the most popular models recently published is the old-time stage coach, and a very large number of readers have made them. We have been

and ready made for fixing the whole thing to an odd piece of wood. This in turn can be hung on the workshop wall with two holes or can be permanently screwed there in place.

Wallpapering Roller

APAINTER'S or paperhanger's brush is often expensive to buy if it is to be used only once or twice. A good



substitute is to buy one of those large rubber rollers, such as used for a duplicator, at a stationer's. These are quite cheap and are far handier for smoothing the paper than a brush. Or a good roller can be made as shown in sketch, by slipping on an old inner tube of a bicycle tyre on to a 2 in. curtain rod and making a handle as shown.

delighted to see the photographs sent in, and also to notice the additions which have been made. To create more realism in many cases horses have been added, with a driver and postilion on top. In some cases, however, realism has been effected by the postilion having a coach-horn in operation, and the driver his whip and post-horn basket handy.

The point in connection with many of these photographs is one which may apply in many other cases, and which readers should note. In some instances, we find the additions made to the models have been out of all proportion to the rest of the work. We have seen a really colossal post-horn which in reality would have been so unwieldy that the coachman could not have used it.

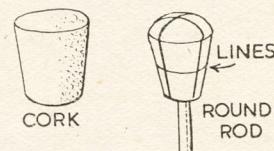
Get Proportion Right

In another instance, we remember the whip in the hands of the driver had a lash so short that it would barely have reached to the first pair of horses, and certainly not to the two front ones. Little things like the handles on the coach, too, have been made absurdly large or equally absurdly small. Although we have spoken specifically of the stage coach, this matter of proportion arises in many other models.

It applies to the additions which you may make to such things as motor cars, to ships, and particularly old-time galleons. These points are merely some of those relating to the remarks with which we began this article. Make an endeavour to progress in your standard with each piece of work you undertake. Give thought to it before you actually commence any manual operation. Make up your mind finally that you are going to spend time, patience and labour profitably to prove that you are a craftsman, and not just a maker.

Galleon Lanterns

AVERY effective and quick way to make lanterns for model galleons is as follows. Use an ordinary bottle cork (the size, of course, depends upon the



galleon), wet the blade of your knife and round off the cork at the thickest end. Smooth it up with fine glasspaper and paint it yellow with black lines for iron bars. To finish it off, insert a small piece of dowelling in the base, which may be fitted in the deck and stern.

To Loosen Screws

YET another way to loosen stubborn screws is to apply a little vinegar, and let it soak in before using the screwdriver. This is often successful when oil fails.

Hours of fun for any youngster who has this BLACKBOARD AND EASEL

THE blackboard and easel shown here would make a splendid gift for the youngster, and would be of great general use and educational value.

The tray fixed to the lower rail of the easel will be found most useful for holding crayons, pencils and the usual duster for cleaning. Wood, from $1\frac{1}{2}$ in. to $1\frac{3}{4}$ in. wide and $\frac{1}{8}$ in. thick should be found adequate for all parts of the

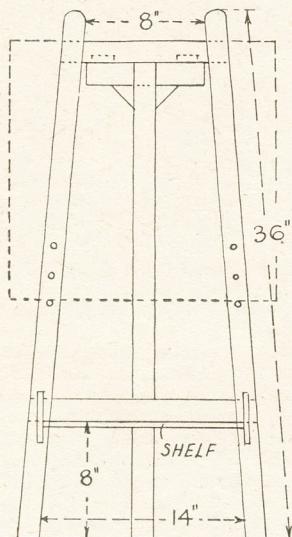


Fig. 1—Framework of the easel

easel itself, with wood $\frac{1}{8}$ in. for the ends of the tray and $\frac{1}{4}$ in. stuff for the floor.

First plane the two long side rails and cut off two lengths 3ft. long. Round off the top ends to a semi-circle with the fretsaw and make smooth with glass-paper. Next cut off another piece of the same section stuff $15\frac{3}{4}$ in. long for the lower cross rail, and a rail $11\frac{1}{2}$ in. long for the top which is to take the hinges of the support rail.

Having cut the two cross rails with square ends, do not attempt yet to cut them to the finished slope, as this can best be done after all the parts are glued and fixed together.

Setting The Legs

Now measure 8in. from the lower ends, and 3in. down from the top ends of the long rails. Splay these latter out so the lower cross rail when laid upon them exactly covers them to the points marked. The top cross rail is also meeting and lapping on to the side rails in a similar manner. See that the upright rails and the cross rails make the even and correct angles each side before pencilling on the line of the inner edges of the upright rails and the cross rails. The pencilled lines will denote where the saw-cut comes in cutting down the halving for the lap joints shown in Figs. 1 and 2.

When the cutting and cleaning has been done, fit the rails to the uprights temporarily to see a sound fit has been made. When all the joints fit flush and true they may be glued up and screwed—countersunk brass screws being used in all cases. Bore the holes for the pegs in the upright rails to the measurements given in Fig. 1.

The back support of the easel is an easy piece to make, and Fig. 3 shows its construction. In the lower diagram here, the simple halving joint of the two pieces is shown, while above is given a view of the completed thing with glued triangular blocks of wood added to stiffen the joint.

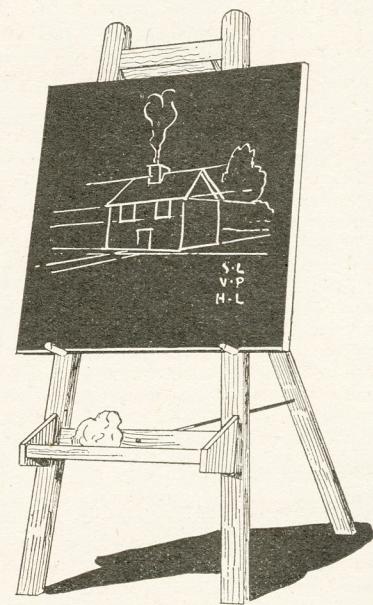
The length of the leg piece is 2ft. $8\frac{1}{2}$ in., and the cross piece at top 8in. long. The manner of attaching the hinges to the cross rail is shown in Fig. 3, while in the right-hand diagram here is shown how these are screwed to the top rail of the easel.

The Tray

The sectional view (Fig. 4) taken en through the tray shows at a glance its simple construction. There are two ends cut from $\frac{1}{8}$ in. or $\frac{1}{4}$ in. wood to the outline and measurements given. The grain of wood runs upwards, of course, so screws put in from the back may not run into end grain.

A thin piece of wood—say, $\frac{1}{8}$ in., is next cut $13\frac{1}{2}$ in. long for the floor which is to be fixed to the underside of the cross rail. The two back corners of the shelf piece must be cut away neatly to fit round the uprights before the shelf can be screwed or nailed in place. Nails or screws will be run through the bracket ends into the shelf, and an edge beading about $1\frac{1}{2}$ in. by $\frac{1}{8}$ in. in section cut between the ends and glued and nailed to the shelf. The top edge of the beading should be rounded off smoothly.

There is little detail needed for the actual board, the diagram, Fig. 5, being self explanatory. Six Hobbies prepared LD6 panels of wood (each 18in. long, 3in. wide and $\frac{1}{8}$ in. thick) are simply glued up edge to edge and held firmly together by adding two cross battens behind. These may consist of one LD6 board cut up the middle and glass-papered and glued on flush to the edges of the six boards. The whole surface and the four edges are finally made smooth and safe to handle with coarse and fine glasspaper. Or you can make the complete area, 18in. square, from



other boards as you wish.

To get a suitable flat dense black the board should be coated with a special Blackboard paint obtainable at most colourmen or hardware stores. Two or more coats should be applied, with a rubbing down of fine glasspaper between each successive coat. The panels suggested for the board will make one 18in. square, a very convenient size for the easel designed here.

The type of peg suggested is shown in Fig. 2. Pieces of $\frac{1}{8}$ in. or $\frac{1}{4}$ in. round rod of suitable length should be cut and shouldered down to fit the holes in the easel. An eye with a short length of cord will ensure the pegs not being lost or mislaid.

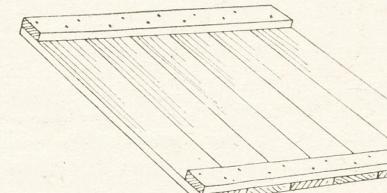


Fig. 3—Rail joints and hinging

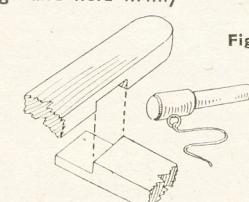


Fig. 4—The front tray

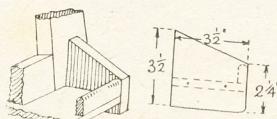


Fig. 5—Narrow boards together to form blackboard

Paste, scissors and paper can provide simple NOVELTY CUT-OUTS

HERE are two novelties which continue to show the usefulness of the fretsaw as a hobbyists' tool. The first is for the young girl who is in the 'playing with Dolly' stage, and taking an interest in dress materials. The second is for the tiny tot who is at that wonderful stage when his hands start exploring strange outlines and textures.

From Fig. 1, we see that we have a shaped hole in a thin sheet, where the lady's dress is to come. The head, arms and legs are painted on the sheet. The cut-out is laid over a patterned piece of material, whereupon the cut-out lady appears to have a patterned frock. All sorts of materials may be put behind the shape, and a great variety of different dresses is obtained.

Dressing the Lady

By using two or three different shapes representing, say, a general type frock, a tailored costume and an evening dress, the young child can get plenty of interest in placing the shape over suitable materials.

These materials can either be spare scraps or can be actual dresses. Even patterned papers can be used.

The sheet from which the patterns are cut must be (a) fairly thin; (b) not easily broken under rough-and-tumble play

conditions; (c) not transparent; (d) preferably of a neutral tint. In most towns there are shops which sell sheets of plastic and these may do very well.

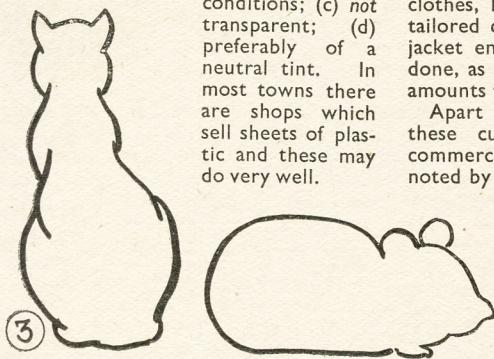


Fig. 3—Two simple pleasing silhouettes

For the main pattern, reference is made to suitable fashion drawings in magazines or dress journals. They will probably want enlarging. The figure should be quite $7\frac{1}{2}$ in. high, as apart from the difficulty of cutting a small figure and of painting the facial details to a small scale, there is not much effect if the cut-out is so small that the pattern on the material is out of all proportion.

Make a separate drawing of the figure and then trace down. Black out the dress part and cut it out. The face and limbs are painted on. Enamels are best. Red, yellow and white form a good flesh tint. In Fig. 1, the arms, etc., have been rather darkened so that the effect of the cut-out is better seen. Actually they will

be painted a clear flesh tint.

If it is desired to apply the principle to men's clothes, we can set about it in a different way. In this we take a clear and transparent piece of plastic, and lay it over a suitable drawing of a clothed male figure.

As before, this will probably be an enlarged copy of a newspaper advertisement, etc. We ink over the main outlines and chief folds (Fig. 2). The face and hair (with hat, perhaps) are painted in with solid colour and all the background is blacked, somewhat in the manner of those tin foil pictures under glass.

It will be appreciated that in the case of a woman's frock, we can show it as a single length, ignoring any belt or ornament at the waist. With a man's clothes, however (and with a woman's tailored costume), we must hint at the jacket end, the lapels, etc. These are done, as we have seen, by lines of what amounts to a 'window'.

Apart from their use as playthings, these cut-outs can have a definite commercial use, a fact which might be noted by those readers who like to turn their hobby to profit. We could paint a large male figure, about 18 in. high on a sheet of glass, and place it against a bolt of cloth in a tailor's window.

The glass might be framed and suitable lettering might be added. The same would apply to a woman's frock pattern cut-out. This could be cut from thin card and pinned to a dress length in a window display, the rest of the card being suitably lettered.

Neither thin card nor glass, however, is suitable when making these things for children.

Wooden Animals

Now for another novel cut-out, suitable for the tiny tot. The idea, this time, is to make a wooden cut-out of some animal form, but instead of painting it in the usual way, to cover it with a piece of fur, leather or other appropriate material. As already hinted at the beginning of this article, the



Fig. 1—Material for a woman



Fig. 2—Cut-out for a man

young child is just becoming aware of textures.

Just as the old proverb advises us to cut our coat according to our cloth, so we should design our cut-outs according to the pieces of material we have. These can be scraps of fur, suede, leatherette, baize, and so on. The animal shapes can be taken (probably you will have to enlarge them) from children's illustrated books. Fig. 3 shows a typical example. Note that there are no delicate projections caused by tails, etc., to break off.

Wood or Composition Board

Plywood or composition board is used, and this can be fairly thick, say, $\frac{1}{2}$ in. or so. It must not be so heavy, however, that the child finds difficulty in handling it. The shapes can be employed in various ways. A simple stand can be made, and this can have wheels if desired.

The shape is cut and the material glued on under pressure. Use good glue but do not have it too liquid, as in the case of some materials it may ooze through and cause a 'gumming-up' of fur, etc. Take particular care that the edges are glued well down. If an edge is loose, baby may soon discover how to pull the rest of the material off!

Suitable Material

Normally one would use fur on a cat cut-out; fur on a rabbit cut-out; suede on a mouse cut-out; and so on, but this is by no means compulsory.

If material allows, the cut-outs should be covered both sides. We cannot very well, then, avoid putting in eyes by just showing a back view. Eyes, however, can be shown quite simply, as a rule, by such things as brass-headed nails or the special eyes for toys sold in some toyshops.

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Cactus—(Continued from page 51)

The 'cactus', when finished, is painted a dull green. With its wooden stalk, it looks like some grotesque 'lolly'. The stalk is, when all is ready, inserted, a tight fit, in the hole in the top of the tub.

Colour to Use

Before this is done, however, the tub is to be decorated. Glasspaper down the first coat of paint and then apply the final one. A broken white looks well and should, for preference, be a matt surface. Applying the decoration (to be described) on a slippery surface is not easy.

When dry, the peasant-art decorations can be painted on. This is a style of work that all hobbyists should

learn, as it can be applied to a great variety of objects, great and small. Two typical designs are shown in Fig. 4. It is most essential to realize that these are made by 'free' brush strokes—simple sweeps and dabs. You bear down on the strokes as you start, and lift as you finish.

Easy Painting

The work can be laid out lightly in pencil before you paint in, but do not try to be too accurate. Remember that this peasant-art is, in its genuine form, actually done by Continental peasants, not by trained artists. The paint should be reasonably runny, but not, of course, too sloppy. Bright vivid colours are best. In Fig. 4 (B) indicates blue, (R)

indicates red, (Y) indicates yellow, and (G) indicates green.

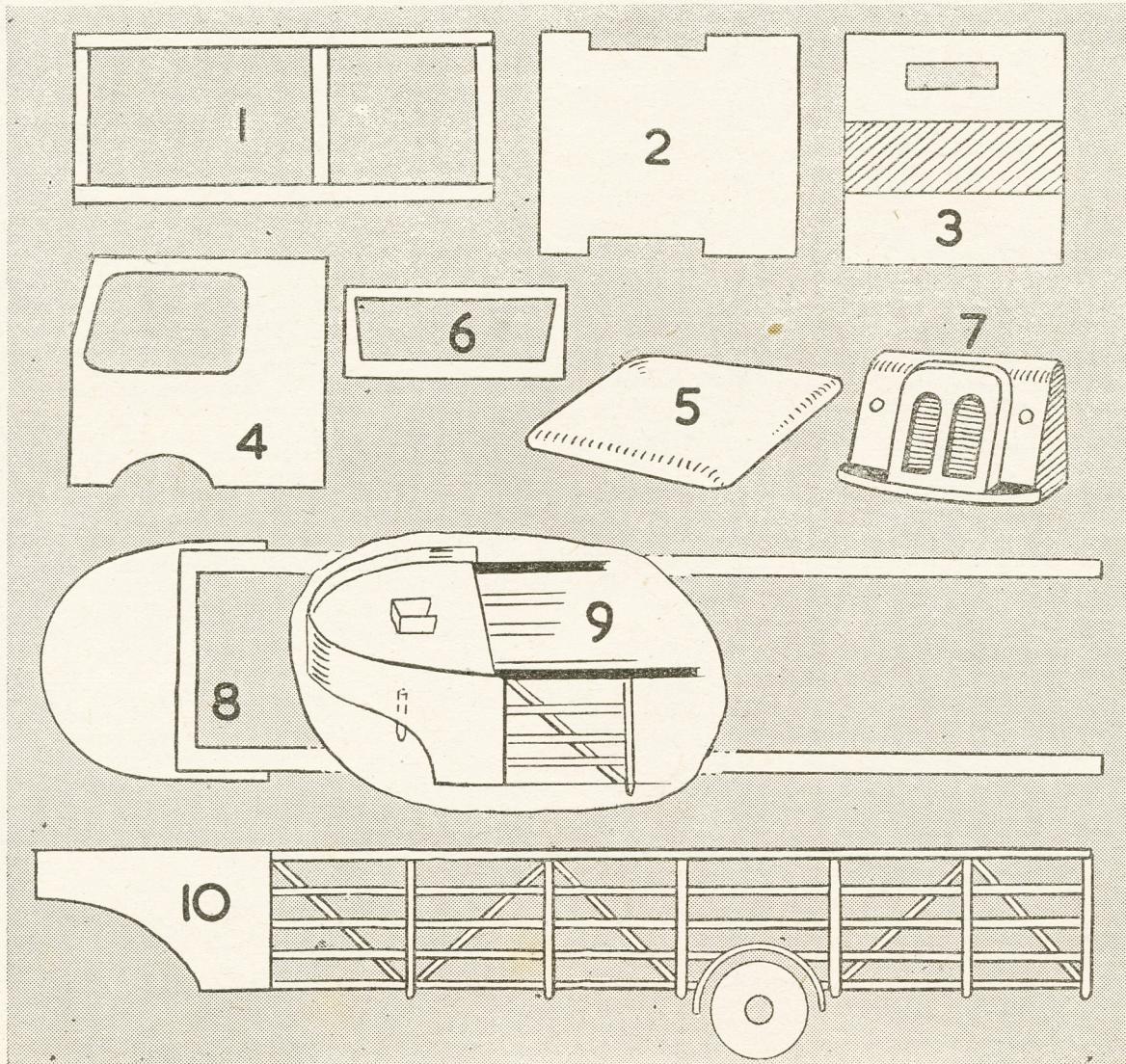
Stencils

A somewhat inferior decoration can be applied with stencils, but this has a rather 'tight' look.

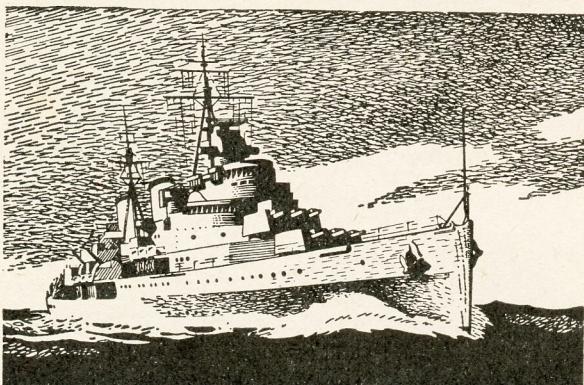
Before inserting the 'cactus', the top of the pot might be coated with thin glue, and sand applied, and then, after an interval, the superfluous sand shaken off.

Most readers will be content to make a single model for their own use, or just one or two as gifts. But it will be appreciated that these novelties should sell well in gift shops. This brief hint to enterprising readers should be enough. Especially with Christmas coming!

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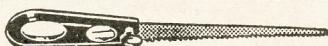
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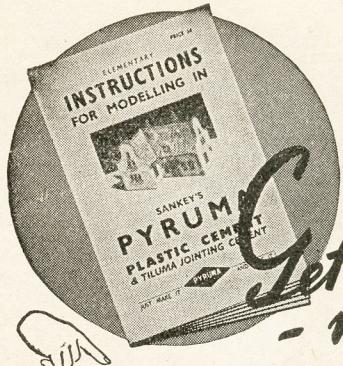
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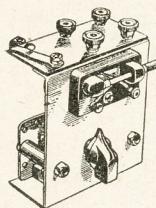
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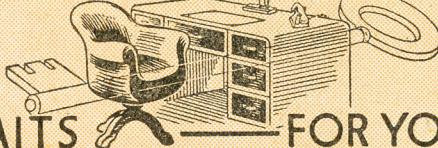
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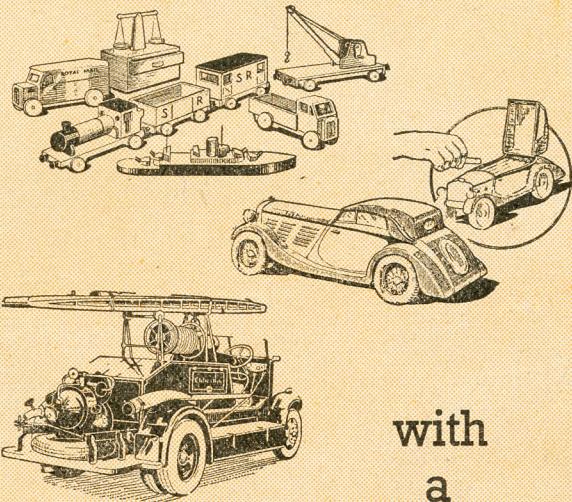
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